

Phil Santos

ENGINEER ASSISTANT



Tom Kleindinst/WHOI

“ I’m an engineer assistant. I started here October first last year, about the time the new frame for *Alvin* arrived. That’s when the sub started getting assembled. Here, I was assisting engineer Rod Catanach, doing a lot of test fitting of components and equipment. I’m attaching a lift strap to move around a block of syntactic foam, which provides flotation for the sub. This block goes on the top of the frame on the starboard side, behind the personnel sphere. It surrounds the top half of the variable ballast spheres.

We had fit issues, because the frame was modified. It’s not completely new, but portions of it are. If everything’s new, it’s a lot easier to build something. But if you’re using old parts and new parts, it’s a little tougher to get them to all match up.

We try to keep gaps between the foam and the sphere. You want to have something that’s going to give a little, like the suspension in your car, between the body and the frame. Especially on a vehicle like this, where you have different parts made of different materials that contract and expand at different rates. You want the parts to have space for that expansion and contraction.

Some of the gaps are pathways for plumbing or electrical wires. You want to have some avenues for things to go through. The size of the gap varies depending on what you’re going to be running through there.

The block forward of this one on the sub acts as the mount for the starboard vertical thruster that moves the sub up or down. That thruster has to be releasable. If anything was to get caught in it or they wanted to make the sub lighter to rise in the water, the pilot can actually release the thruster from inside the sub. So the other thing we were doing was fitting the thruster to the foam and then making sure it could fall away and clear everything when they wanted to jettison it.

There are many talented, brilliant people here. I’m learning a lot from these guys that have been doing it a long time, and from the new engineers as well. When you’re working on *Alvin* up close like that, sometimes it’s good to have someone standing back seeing the big picture and saying, ‘Whoops, you just put the right shoe on the left foot.’

My training was in aircraft maintenance. There are many similarities to subs. You have weight and balance issues, metal fabricating, electronics, hydraulics, and pneumatics, things like that.

Years ago, back in ’83-’84, I was a volunteer at WHOI, as a safety diver. I did two cruises with scientists Larry Madin and Rich Harbison, scuba diving to do bluewater collections of plankton. I just love being under water. Any part of nature is good for me. Under sea is inner space, it’s a whole different realm, and this place is like the NASA of inner space. I’m just happy to be a part of it. ▲